

## **IN THE CLAIMS**

This listing of the claim will replace all prior versions and listings of claim in the present application.

### **Listing of Claims**

Claims 1 and 2 (canceled).

3. (currently amended) An image signal processing method for processing a color component signal obtained by a solid-state image pickup device including an arrangement of a plurality of a photoelectric elements and a color filter arranged in the light receiving section of each of the pixels corresponding to the photoelectric elements, comprising the steps of:

storing a first color component signal from a designated pixel corresponding to the photoelectric element having a filter capable of passing at least green light on a line of said solid-state image pickup device in a memory device ;

storing a second color component signal from at least one pixel in the neighborhood of said designated pixel corresponding to said photoelectric element in said memory device, the neighboring pixel having a filter for transmitting at least the green light on a line different from said line; and

interpolating the value of said first color component signal based on the value of said second color component signal in an interpolation processing unit,

wherein said designated pixel is a pixel corresponding to the photoelectric element on a horizontal line, and the pixel in the neighborhood of said designated pixel includes a pixel on another horizontal line adjacent to said designated pixelA method according to Claim 2, and

wherein the average of said first and second color component signal signals of said designated pixel and said second color component signal of the pixel in the neighborhood of said designated pixel is calculated, and the value of said first color component signal is interpolated based on said average of said first and second color component signals.

4. (currently amended) An image signal processing method for processing a color component signal obtained by a solid-state image pickup device including an arrangement of a plurality of a photoelectric elements and a color filter arranged in the light receiving section of each of the pixels corresponding to the photoelectric elements, comprising the steps of:

storing a first color component signal from a designated pixel corresponding to the photoelectric element having a filter capable of passing at least green light on a line of said solid-state image pickup device in a memory device ;

storing a second color component signal from at least one pixel in the neighborhood of said designated pixel corresponding to said photoelectric element in said memory device, the neighboring pixel having a filter for transmitting at least the green light on a line different from said line; and

interpolating the value of said first color component signal based on the value of said second color component signal in an interpolation processing unit,

wherein said designated pixel is a pixel corresponding to the photoelectric element on a horizontal line, and the pixel in the neighborhood of said designated

pixel includes a pixel on another horizontal line adjacent to said designated pixelA  
~~method according to Claim 2, and~~

wherein said solid-state image pickup device includes a Bayer arrangement pattern having pixels corresponding to the photoelectric element with a red light pass filter, a pixel corresponding to the photoelectric element with a filter capable of transmitting at least the green light and a pixel corresponding to the photoelectric element with a blue light transmitting filter, and in the case where each of said pixels can be specified by the row number  $m$  of a horizontal line and the column number  $n$  of vertical line orthogonal to said horizontal line of said solid-state image pickup device ( $m, n$ : arbitrary positive integer), assuming that the color signal component of said designated pixel having a filter capable of transmitting at least the green light on said horizontal line is given as  $G_{m,n}$ , the value of the color component signal of said designated pixel having a filter capable of transmitting at least the green light is determined by at least selected one of the formulae  $(G_{m-1, n-1} + G_{m,n})/2$ ,  $(G_{m+1, n+1} + G_{m,n})/2$ ,  $(G_{m-1, n+1} + G_{m,n})/2$  and  $(G_{m+1, n-1} + G_{m,n})/2$ .

Claim 5-7 (canceled).

8. (currently amended) An image signal processing apparatus for processing a color component signal obtained by a solid-state image pickup device including an arrangement of a plurality of photoelectric elements and a color filter arranged in the light receiving section of each of the pixels corresponding to the photoelectric element, comprising:

a memory for storing a first color component signal from a designated pixel corresponding to the photoelectric element having a filter capable of transmitting at least a green light on a line of said solid-state image pickup device, said memory storing a second color component signal from a pixel corresponding to the photoelectric element in the neighborhood of said designated pixel, said neighboring pixel having a filter capable of transmitting at least a green light on a line different from said designated line; and

an interpolation processing unit for interpolating the value of said first color component signal based on the value of said second color component signal~~An apparatus according to Claim 7,~~

wherein said designated pixel is a pixel corresponding to the photoelectric element on a horizontal line, and said pixel in the neighborhood of said designated pixel includes a pixel on another horizontal line adjacent to said designated pixel, and

wherein said interpolation processing unit interpolates the value of said first color component signal based on average value of said first and second color component ~~signal~~ signals ~~of said designated pixel and said second color component signal of said pixel in the neighborhood of said designated pixel.~~

9. (currently amended) An image signal processing apparatus for processing a color component signal obtained by a solid-state image pickup device including an arrangement of a plurality of photoelectric elements and a color filter

arranged in the light receiving section of each of the pixels corresponding to the photoelectric element, comprising:

a memory for storing a first color component signal from a designated pixel corresponding to the photoelectric element having a filter capable of transmitting at least a green light on a line of said solid-state image pickup device, said memory storing a second color component signal from a pixel corresponding to the photoelectric element in the neighborhood of said designated pixel, said neighboring pixel having a filter capable of transmitting at least a green light on a line different from said designated line; and

an interpolation processing unit for interpolating the value of said first color component signal based on the value of said second color component signal,

wherein said designated pixel is a pixel corresponding to the photoelectric element on a horizontal line, and said pixel in the neighborhood of said designated pixel includes a pixel on another horizontal line adjacent to said designated pixel,  
and~~An apparatus according to Claim 7,~~

wherein in the case where said solid-state image pickup device has a Bayer arrangement pattern of pixels corresponding to the photoelectric element with a red light transmitting filter, a pixel corresponding to the photoelectric element with a filter capable of transmitting at least the green light and a pixel corresponding to the photoelectric element with a blue light transmitting filter, and each of said pixels can be specified by the row number  $m$  of a horizontal line and the column number  $n$  of the vertical line orthogonal to said horizontal line of said solid-state image pickup device ( $m, n$ : arbitrary positive integer), assuming that the color signal component of

said designated pixel corresponding to the photoelectric element having a filter capable of transmitting at least the green light on a horizontal line is given as  $G_{m,n}$ , said ~~arithmetic means~~ interpolation processing unit determines the value of the color component signal of said designated pixel having a filter capable of transmitting at least the green light by at least selected one of the equations  $(G_{m-1, n-1} + G_{m,n})/2$ ,  $(G_{m+1, n+1} + G_{m,n})/2$ ,  $(G_{m-1, n+1} + G_{m,n})/2$  and  $(G_{m+1, n-1} + G_{m,n})/2$ .

Claim 10 (canceled).

11. (currently amended) An image signal generating apparatus comprising a solid-state image pickup device including an arrangement of a plurality of photoelectric elements and a plurality of color filters arranged in the light receiving sections of the pixels corresponding to the photoelectric element, respectively, and an image signal processing unit for processing the color component signal obtained by said solid-state image pickup device, wherein said signal processing unit includes:

a memory for storing a first color component signal from a designated pixel corresponding to the photoelectric element having a filter capable of transmitting at least a green light on a line of said solid-state image pickup device, said memory storing a second color component signal from a pixel corresponding to the photoelectric element in the neighborhood of said designated pixel, said neighboring pixel having a filter for transmitting at least a green light on a line different from said designated line; and

an interpolation processing unit for interpolating the value of said first color component signal based on the value of said second color component signal,

wherein said designated pixel is a pixel corresponding to the photoelectric element on a horizontal line, and the pixel in the neighborhood of said designated pixel includes a pixel on another horizontal line adjacent to said designated pixel,  
and

wherein said interpolation processing unit interpolates the value of said first color component signal based on an average value of said first and second color component signals.

12. (currently amended) A computer program product comprising:  
a computer usable medium having computer readable program code means embodied therein for processing the color component signal obtained by a solid-state image pickup device having an arrangement of a plurality of photoelectric elements and a color filter arranged in the light receiving section of each of said pixels corresponding to the photoelectric element, said computer readable program code means comprising:

means for storing a first color component signal from a designated pixel corresponding to the photoelectric element having a filter capable of passing the green light on a line of said solid-state image pickup device in a memory device;

means for storing a second color component signal from at least one pixel in the neighborhood of said designated pixel corresponding to said photoelectric element in said memory device, the neighboring pixel corresponding to the

photoelectric element having a filter for transmitting at least the green light on a line different from said designated pixel line; and

means for interpolating the value of said first color component signal based on the value of said color component signal in an interpolation processing unit,

wherein said designated pixel is a pixel corresponding to the photoelectric element on a horizontal line, and the pixel in the neighborhood of said designated pixel includes a pixel on another horizontal line adjacent to said designated pixel, and

wherein an average of said first and second color component signals is calculated, and the value of said first color component signal is interpolated based on said average of said first and second color component signals.

13. (New) An image signal generating apparatus according to claim 11, wherein in the case where said solid-state image pickup device has a Bayer arrangement pattern of pixels corresponding to the photoelectric element with a red light transmitting filter, a pixel corresponding to the photoelectric element with a filter capable of transmitting at least the green light and a pixel corresponding to the photoelectric element with a blue light transmitting filter, and each of said pixels can be specified by the row number  $m$  of a horizontal line and the column number  $n$  of the vertical line orthogonal to said horizontal line of said solid-state image pickup device ( $m, n$ : arbitrary positive integer), assuming that the color signal component of said designated pixel corresponding to the photoelectric element having a filter capable of transmitting at least the green light on a horizontal line is given as  $G_{m,n}$ ,



said interpolation processing unit determines the value of the color component signal of said designated pixel having a filter capable of transmitting at least the green light by at least selected one of the equations  $(G_{m-1, n-1} + G_{m,n}) / 2$ ,  $(G_{m+1, n+1} + G_{m,n}) / 2$ ,  $(G_{m-1, n+1} + G_{m,n}) / 2$  and  $(G_{m+1, n-1} + G_{m,n}) / 2$ .

14. (New) A computer program product according to claim 12, wherein said solid-state image pickup device includes a Bayer arrangement pattern having pixels corresponding to the photoelectric element with a red light pass filter, a pixel corresponding to the photoelectric element with a filter capable of transmitting at least the green light and a pixel corresponding to the photoelectric element with a blue light transmitting filter, and in the case where each of said pixels can be specified by the row number  $m$  of a horizontal line and the column number  $n$  of vertical line orthogonal to said horizontal line of said solid-state image pickup device ( $m, n$ : arbitrary positive integer), assuming that the color signal component of said designated pixel having a filter capable of transmitting at least the green light on said horizontal line is given as  $G_{m,n}$ , the value of the color component signal of said designated pixel having a filter capable of transmitting at least the green light is determined by at least selected one of the formulae  $(G_{m-1, n-1} + G_{m,n}) / 2$ ,  $(G_{m+1, n+1} + G_{m,n}) / 2$ ,  $(G_{m-1, n+1} + G_{m,n}) / 2$  and  $(G_{m+1, n-1} + G_{m,n}) / 2$ .